





1100024354

LP 19 FST 1 2002



1100024354  
 Oil pollution and oil bacteria distribution in Pulau Perhentian,  
 South China Sea / Lau Lee Sek.



**PERPUSTAKAAN**  
 KOLEJ UNIVERSITI SAINS & TEKNOLOGI MALAYSIA  
 21030 KUALA TERENGGANU

<b>1100024354</b>		

**1100024354**

PERPUSTAKAAN KOLEJ UNIVERSITI SAINS & TEKNOLOGI MALAYSIA (KUSTEM)			
Pengarang		No. Panggilan	
Tarikh		Tanda tangan	
Lau Lee Sek		LP 24 PST	
Judul Oil pollution and oil bacteria distribution			
	Waktu Pemulangan	Nombor Ahli	
		2002	

16/2/10

**OIL POLLUTION AND OIL BACTERIA DISTRIBUTION  
IN PULAU PERHENTIAN, SOUTH CHINA SEA.**

**BY**

**LAU LEE SEK**

**This project report is submitted in partial  
fulfilment of the requirements for the Degree  
of Bachelor of Science (Marine Science)**

**FACULTY OF SCIENCE AND TECHNOLOGY**

**UNIVERSITY PUTRA MALAYSIA**

**TERENGGANU**

**2002**

**1100024354**



**This project report should be cited as:**

**Lau, L. S. 2002. Oil Pollution and Oil Bacteria Distribution in Pulau Perhentian, South China Sea. Final Year Project report, Bachelor of Science (Marine Science), Faculty of Applied Science and Technology, Universiti Putra Malaysia Terengganu, Terengganu. 75p.**

**No part of this project report may be reproduced by any mechanical, photographic, or electronic process, or in the form of phonography recording, nor may it be stored in a retrieval system, transmitted, or otherwise copied for public or private use, without written permission from the author and the supervisor(s) of the project.**

## **ACKNOWLEDGEMENTS**

First and foremost I would like to thank to my supervisor, Professor Dr. Law Ah Theem for his invaluable guidance, advice, encouragement, supervision and time spend in this study to complete this project successfully. I appreciate all the helping and knowledge from him.

I express my deepest gratitude to my beloved parents, brothers and sisters for giving their love, support, encouragement and every thing in my life. My thanks also reach to my dear friends Chan, Andrea, Hui, and Hong, I will always remember their kindness, helps, comment and everything that I owe them. Thank you very much!

I am also very thankful to the entire lab assistant contributed to this study for their help and guidance. My appreciation also to Hii, Jong, Julie and Mok for their helps and support. Last but not the least, I apologies for my misbehaviours, problems and difficulties I had made accidentally.



## ABSTRAK

Kajian tentang taburan hidrokarbon petroleum di kawasan perairan Pulau Perhentian telah dijalankan pada bulan April dan Ogos 2001. Sebanyak dua kali penyampelan (17/04/2001–19/04/2001, 17/08/2001– 9/08/2001) telah dilaksanakan pada 16 lokasi kajian terpilih.

Pulau Perhentian mengandungi paras hidrokarbon yang sangat rendah. Analisis statistik menunjukkan perbezaan bererti ( $p < 0.05$ ) pada paras hidrokarbon pada kedalaman berlainan pada kali penyampelan pertama dan kedua. Min keseluruhan paras hidrokarbon dari permukaan, pertengahan dan lapisan bawah adalah 12.39 ppb. Paras ini adalah lebih tinggi daripada paras hidrokarbon di Pulau Redang tetapi lebih rendah daripada Pulau Bidong. Paras kontaminasi hidrokarbon di Pulau Perhentian adalah masih rendah dan selamat untuk organisma marin.

Terdapat hubungan antara paras hidrokarbon petroleum, populasi bakteria pengurai hidrokarbon dan populasi bakteria heterotropik. Satu kolerasi yang baik telah didapati antara populasi bakteria pengurai dengan paras hidrokarbon dalam air ( $R^2 = 0.6139$ ). Keputusan yang sama juga dijumpai bagi jumlah bakteria heterotropik dengan paras hidrokarbon dalam air ( $R^2 = 0.9620$ ).



## ABSTRACT

The distribution of petroleum hydrocarbons in the coastal waters of Pulau Perhentian was studied during the months of April and August 2001. Two sampling trips (17/04/2001 – 19/04/2001, 17/08/2001 – 19/08/2001) were conducted to all of the 16 sampling stations.

A very low hydrocarbon level was found in Pulau Perhentian. Statistical analysis indicated that there was a significant difference ( $p < 0.05$ ) on the level of petroleum hydrocarbon at different sampling station depths in the first sampling and second sampling. The overall mean of hydrocarbon content in water was 12.39 ppb. This level is higher than those found in Pulau Redang and lower than detected in Pulau Bidong. The level of hydrocarbon contamination in Pulau Perhentian is still very low and safe for marine organisms.

There are a relationship among the petroleum hydrocarbon levels, the oil-degrading bacteria population and the total heterotrophic bacteria population. A good correlation was found between the oil-degrading bacteria population in water and the hydrocarbon level in water ( $R^2 = 0.6139$ ). A similar result was found for the total heterotrophic bacteria and hydrocarbon in water ( $R^2 = 0.9620$ ).